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ABSTRACT

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Satisfaction-Rewards-Performance: Review of the Literature, and a Causal Analysis

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A longitudinal study was carried out to explore the causal relationship among satisfaction, performance, and several reward types. The major findings support 'interpersonal rewards' as a further link of satisfaction and performance; the results failed to support either the human relations model (satisfaction causing performance) or the reverse relationship.

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Performance-rewards-satisfaction: A review of the literature and a causal analysis[1]

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The relationship between job satisfaction (or morale), rewards or outcomes, and job performance has generated interest for at least four decades now, and research in this area does not appear to be waning. In spite of much time and energy, (and journal pages), little 'conclusive' evidence has come forth.

As early as 1932, a review of the literature by Kornhauser and Sharp (1932) found no significant relation between satisfaction and performance. Nevertheless, research on the issue continued. Katz and Heyman (1947) found that morale and job satisfaction were highly correlated to productivity in U. S. shipyards during World War II. Shortly after, Katz et al., (1950) found that job satisfaction correlated positively with high and low levels of productivity but was not related to the middle ranges of productivity.

During the fifties, Ash (1954), Mitzner and Mann (1953) and Weitz and Nichols (1953) concluded that job satisfaction was related to certain aspects of productivity; yet, Gadel and Kreidt (1953) and Morse (1953) claim the two variables are not necessarily related. In a major review, Brayfield and Crockett (1955) concluded "there is little evidence in the available literature that employee attitudes bear any simple--or, for that matter, appreciable--relationship to performance on the job" (p. 396).

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1. The author is grateful to Professor George Graen and Takao Minami for the use of part of their data. I am also thankful to Robert Atkin for his comments on this paper.

In spite of this negative conclusion, Herzberg, Mausner, Peterson, and Capwell (1957) renewed interest in the issue when their review concluded that "there is frequent evidence... that positive job attitudes are favorable to increased productivity. The relationship is not absolute, but there are enough data to justify attention to attitudes as a factor in improving the worker's output" (p. 103). Approaching the issue from a different perspective, Vroom (1964) argued that there existed small, but positive relationships between these two controversial variables (median correlation of .14).

Much of the research cited, except Vroom (1964), appears to be an outgrowth of the 'human relations' movement, which gained prominance during the 1930's. A major tenet of this approach suggested that higher morale leads to increased productivity, and much of the research effort appears to have been directed at supporting this position.

During the fifties, a second major approach attempted to relate satisfaction and performance through moderators (Saunders, 1956; Ghiselli, 1960). A variant considered satisfaction and performance as joint independent or dependent variables related to some 'third' variable. Researchers have made use of numerous moderators or 'third' variables. Several of these are noted in Table 1.[2]

A third major movement advocated that performance leads to satisfaction. Porter and Lawler (1968) were instrumental in popularizing this approach. Their model, simply stated, says that "good performance may lead to rewards, which in turn lead to satisfaction; this formulation then would say that satisfaction, rather than causing performance, as was previously assumed, is caused by it" (1968, p. 23).

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2. For a more thorough discussion of the studies utilizing these variables, the reader is directed to Schwab and Cummings (1970).

Table 1

Some Moderators or Third Variables Which Have Been Related to Satisfaction and Performance**

Study	Third Variables
March and Simon (1958)	Present or anticipated state of discontent
Triandis (1959)	Pressure for production
Harding and Bottenberg (1961)	Personality and biographical variables
Katzell et al. (1961)	Urbanization
Lawis et al. (1968)	Work adjustment
Korman (1968, 1970)	Self esteem
	Task success
	Task popularity
Carlson (1969)	Ability
Doll and Gunderson (1969)	Occupational group
Siegel and Bowen (1971)	Self-esteem
Huber (1971)	Superior-subordinate similarity
Landy (1971)	Motivational type
Slocum (1970, 1971)	Management level and need level

**For a more complete list relating to satisfaction or performance separately, see Schwab and Cummings (1970).

The rationale for their model is grounded in expectancy theory (Tolman, 1932; Lewin, 1938; Georgopoulos, Mahoney, and Jones, 1957; Vroom, 1964). Porter and Lawler attempted to eliminate some of the problems inherent in expectancy theory by incorporating aspects of equity theory and need theory to explain how satisfaction develops and how outcomes gain their valence, and partially to explain how expectancies develop.

This model considers performance as a first level outcome ('act' in Vroom's terminology), rewards (each with their respective valence and relation to performance) as second level outcomes, and satisfaction a result of the usefulness of the rewards in satisfying needs. The basic point to be made is that satisfaction is seen as a dependent variable which should be related to performance when the person sees performance related to valued outcomes. Value of an outcome is determined by the degree to which it satisfies needs or by the degree of relationship perceived by the individual between outcomes and satisfaction. Satisfaction has only an indirect effect on performance via a feedback loop to expectancies. The major conclusion of interest reached by the authors was that performance and satisfaction were related ($r = .32$) when performance was evaluated by superiors. This effect was not observed for self-ratings of performance. The authors also found a significant relationship between rewards and performance. One of the major problems with the model is that it fails to account for other factors which may also lead to satisfaction (Schwab and Cummings, 1970). That is, other factors (e.g., seniority) may provide a better road to satisfaction than performance. For example, Green and Organ (1973) see 'role compliance' affecting both performance evaluation and satisfaction. In their model, satisfaction would be a result of both performance evaluation and role compliance.

A number of supporters of the 'performance causing satisfaction' relation have emerged. Siegel and Bowen (1971) tested the three major models described above and found strong support for the Porter and Lawler model and little or no support for the others. Locke (1970), utilizing human values and goals, rather than rewards as a moderator of satisfaction and performance, support the directionality of performance leading to satisfaction. Nathanson and Becker (1973), in testing some of Locke's propositions, emphasize that satisfaction or performance can occur in the absence of one another for a number of reasons, but the two are only related when performance leads to the attainment of individuals' important job values. Sutermeister (1971) proposed a theoretical model which also supports a stronger causal direction from performance to satisfaction.

Recently, Wanous (1974) conducted a cross-lag study examining the relationship between satisfaction and performance, but failed to discover any significant relation between the two concepts with concurrent or lagged correlations. Upon separating intrinsic and extrinsic satisfaction, he found some support for performance causing intrinsic satisfaction, while extrinsic satisfaction appeared to be a possible cause of performance.

In spite of the continued research activity outlined above, several recent writers do not agree that there is any necessary relationship between the two concepts (Kuhn, et al., 1971; Martin, 1969; Cherington, Reitz, and Scott, 1971).

As a final note, Schwab and Cummings (1970) have stated that "satisfaction and performance studied alone or together, are associated with a large number of covariates... even recent theoretical work has not accounted for a sufficient number of the variables which may influence the strength and perhaps even the direction of the relationship between satisfaction and performance" (p. 428).

Present research. The study reported here has several objectives:

1) To test the satisfaction-reward-performance relationship for causal inference in an attempt to lend either support or cast doubt upon the three existing approaches discussed above.
2) To incorporate 'interpersonal' rewards in addition to intrinsic rewards in the causal network.
3) To examine supervisor and subordinate viewpoints to see if differential perceptions may affect the causal inference in (1).

Method

Subjects

The subjects are 70 management trainees in a large Japanese manufacturing firm. All are single and of the same race. These newcomers have all been employed for less than one year; more specifically, at times 'one' and 'two', they were in the organization for six months and nine months respectively.

Three main job types are represented in the sample: research and development, clerical and administrative, and plant workers. None of the variables used in this study were found to differentiate between job types (Gallagher, 1974).

Instruments

Three basic instruments have been employed to measure (1) performance, (2) satisfaction, and (3) outcomes or rewards.

Performance. Supervisors were asked to rate each subordinate on 13 five-point Likert scales, where 'one' represents 'very poor' and 'five' represents 'excellent'. Principle axes factor extraction with squared multiple correlation communality estimates was performed on the 13 performance items yielding one factor accounting for 75.8 percent of the variance. The three items with the lowest loadings were discarded and the remaining ten items were summed to form the performance evaluation composite score for each individual (Table 2).

Table 2

Performance Factor Loadings

The thirteen original performance items were subjected to Principle Axes factor extraction with squared multiple correlation communality estimates yielding one factor accounting for 75.8 percent of variance.

	Attributes	Loading
1.	dependability	.79
2.	alertness	.69
3.	interpersonal competence	.63
4.	planning	.74
5.	know-how and judgment	.47
6.	present level of performance	.72
7.	interpersonal attraction	.75
8.	expected level of performance	.65
9.	over-all job satisfaction	.50
10.	organizational commitment	.49
11.	future success prediction--over-all	.51
12.	future success prediction--general manager	.60
13.	future success prediction--staff specialist	.38

Outcomes. Seventeen outcomes (rewards) were generated by discussion with the subjects during earlier interview waves. The items were content analyzed by the researchers and 17 items re-administered to the workers. Each item was rated on a five-point Likert scale by both the focal person and his immediate superior. Of concern was how much of a particular reward the rater believed the focal was receiving. The scale ranged from 'almost none' to 'a great deal'.

Principle axes factor extraction with squared multiple correlation communality estimates was performed on the 17 items yielding two discernable factors. The first factor accounted for 53.4 percent of the variance and the second factor accounted for 20.7 percent (see Table 3). A Varimax rotation resulted in reasonably clear identification of the factors. The first dealt with 'interpersonal relations with the supervisor' and the second dealt with job related rewards (intrinsic factor). Two items loading low on both factors were dropped.

Satisfaction. Satisfaction was measured with a global question: "How satisfied are you with your overall job situation?". A similar question was asked of the focal's supervisor regarding the focal. The question was answered on a five-point Likert scale similar to that mentioned above for Outcomes.

Procedure

Time effect. It was believed that the best measure of change would be newcomers in the organization, rather than established incumbents who have already attained a more stable role-exchange. Newcomers should be in a higher state of flux in relating to their role-set (Katz and Kahn, 1966; Graen, 1975).

Causal inference. The issue of causality is one of the prime concerns of science. In the social sciences, Cronbach (1959) differentiated the scientific approach into two disciplines which attempt to 'discover' in

Table 3

Outcome Factor Loadings

The seventeen outcome items were subjected to Principle Axes factor extraction with squared multiple correlation communality estimates yielding two factors accounting for 53.4 percent and 20.7 percent of the variance. The factors were then rotated orthogonally to the Varimax criterion yeilding two factors accounting for 53 percent and 47 percent of the extracted variance.

Factor I: (53.4% unrotated) Interpersonal factor	Loading
6. performance feedback	.57
9. consideration from supervisor	.58
10. competent supervision	.71
12. trust by superior	.47
13. close supervision/attention	.49
15. support from supervisor	.72
16. influence with supervisor	.72
Factor II: (20.7% unrotated) Intrinsic factor	
1. job challenge	.76
2. participation in decision making	.50
3. legitimate authority	.55
5. information about management policies and decisions	.65
7. professional development	.52
8. job latitude/autonomy	.46
11. status feedback	.56
14. information about changes; inside information	.58

Cooperation from peers and choice of work location did not load.

distinctly different ways. The experimental approach has a more convincing claim on causal relations; nevertheless, correlational psychology has attempted to develop methods for inferring causality.

One technique developed to infer the likelihood of causality is the 'cross-lagged panel correlation technique.' Early use of a similar technique was reported by Lazarsfeld, et al. (1944). Many other authors have addressed aspects of this technique (Simon, 1954, 1956; Blalock, 1962, 1964, 1969; Pelz and Andrews, 1964; Campbell and Stanley, 1963; Kenny, 1972).

Various criticisms and limitations of the model are enumerated by Rozelle and Campbell (1969). Some recent uses of the model have been by Andrews, Frank and Farris (1972), Lawler (1968), Lawler and Suttle (1972), and Wanous (1974).

The technique works as follows: Data is gathered on two variables at two points in time; one then sets up a diagram as in Figure 1, and computes the six correlations denoted in the diagram. Correlations A and B relate the two variables simultaneously at each time measurement (concurrent correlations). Correlations C and D relate the stability of the measures over time (test-retest reliability). The correlations E and F represent relations of one variable with the other at the different time periods (cross-lagged correlations).

Lawler (1968) and others suggest that if $F > A = B > E$, then there is reasonable evidence to suggest that F more likely has caused E than the reverse. Rozelle and Campbell (1969), however, argue that there are actually four hypotheses being tested: (1) increases in variable X increase variable Y, and decreases in X decrease Y; (2) increases in X decrease Y and decreases in X increase Y; (3) increases in Y increase X and decreases in Y decrease X; and (4) increases in Y decrease X and decreases in Y increase X. Where we find r_{X1Y2} greater than r_{Y1X2}, we really have the joint effect of X increasing Y and Y decreasing X greater than the joint effect of Y increasing X and X decreasing Y.

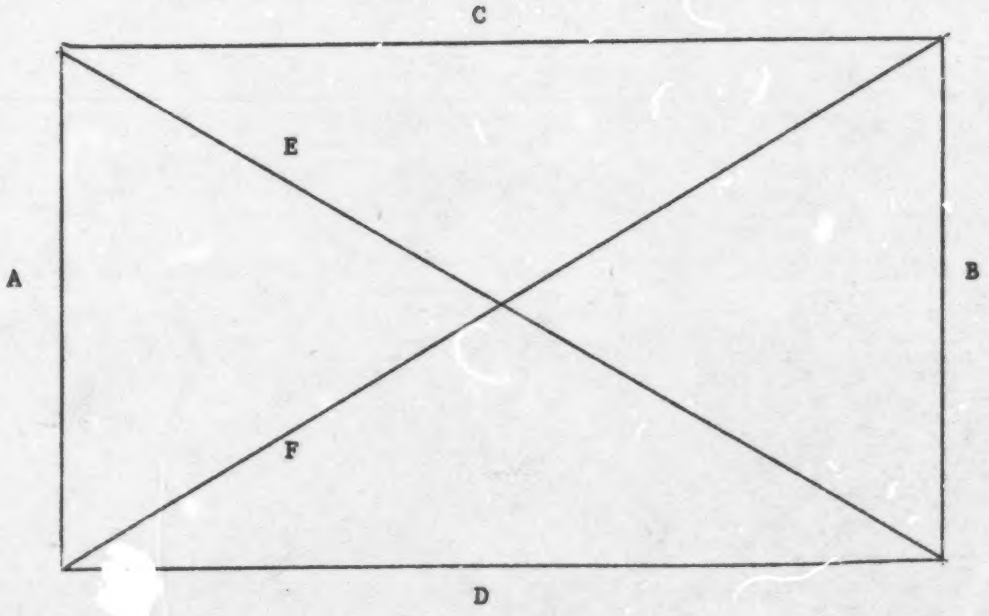

Figure 1. Causal model.

Another primary weakness in this technique lies in the fact that the method cannot rule out the possibility that a third variable causes the two variables under study to covary differentially from time 'k' to time 'k + 1'.

Determining the optimal time lag between 'k' and 'k + 1' is an important question, but not as serious as might be inferred from other studies. For most processes under study, the effect should occur reasonably soon, and after that, only residual effect remains which will attenuate correlations. Second, unless the hypothesized causal relation is extremely high (thus accounting for a major portion of the variance in the 'caused' variable), other causal variables affecting the 'caused' variable will probably change over time.

Further, as Kenny (1972) and others have pointed out, the validity of the inference drawn from cross-lag correlations is dependent upon a stationary factor structure underlying the variables in question. A necessary condition for factor stability is that the concurrent correlations be nearly equal (i.e., $r_{X1Y1} = r_{X2Y2}$). When this condition is not met, as is the case with some of the data reported below, inferences about causality must be made with extreme caution.

One final question pertains to the problem of the significance of the difference between r_{X1Y2} and r_{X2Y1}. Lawler's (1968) criterion that $r_{X1Y2} > (r_{X1Y1} = r_{X2Y2}) > r_{X2Y1}$ is probably too weak. On the other hand, if these correlations are treated as though they were developed from independent samples, the appropriate test (Fisher's r to Z) is quite conservative. For the present purposes, the strategy adopted will be the latter, cognizant of its flaws.

Results

Results are displayed in Figures 2 and 3. Figure 3 shows the values for self-ratings of satisfaction and outcomes (factors I and II), and

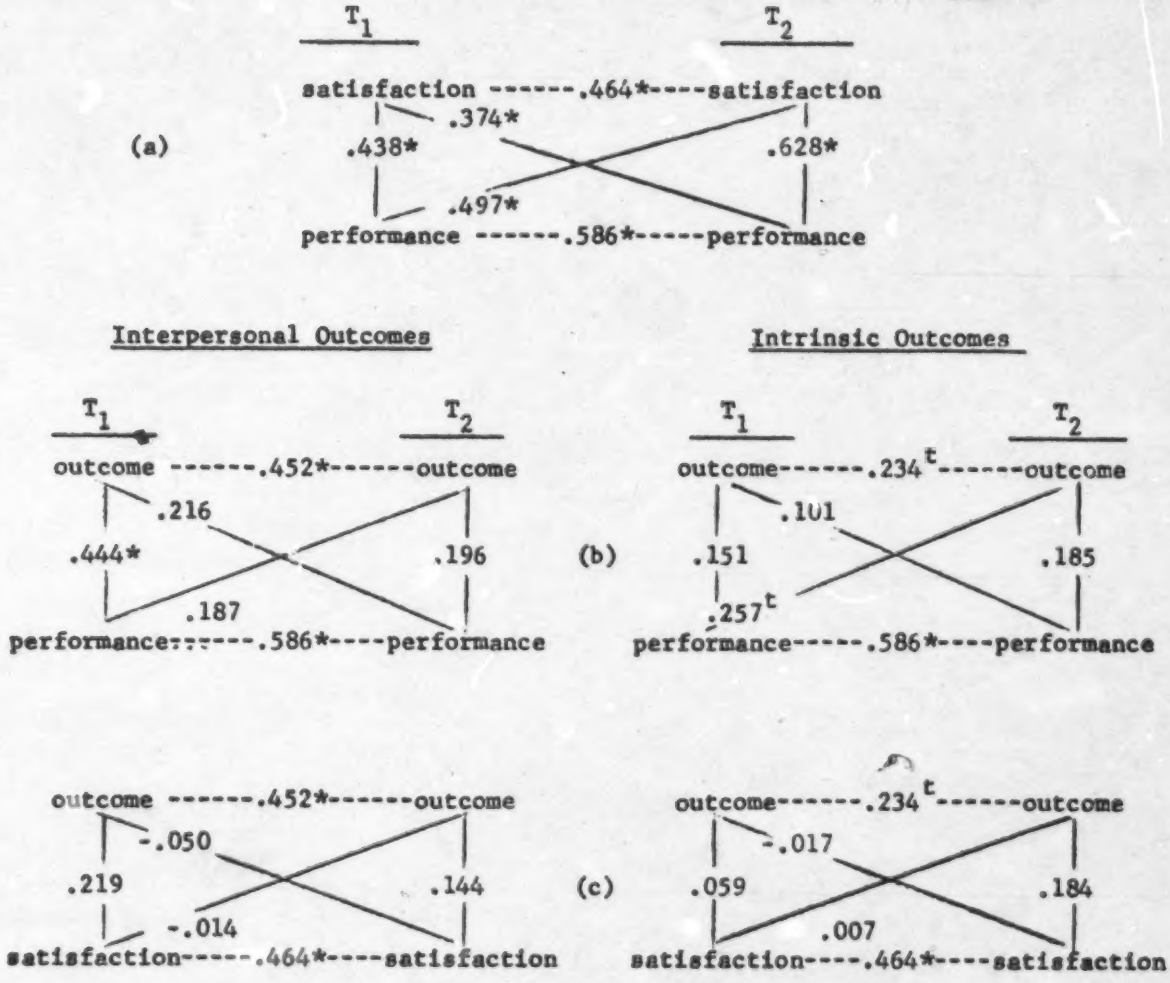

Figure 2. Supervisory-rated panel data.

This figure displays cross-lagged panel correlations for satisfaction (supervisor-rated), outcomes (supervisor-rated) and performance (supervisor-rated). (* = p. <.01; t = p <.05).

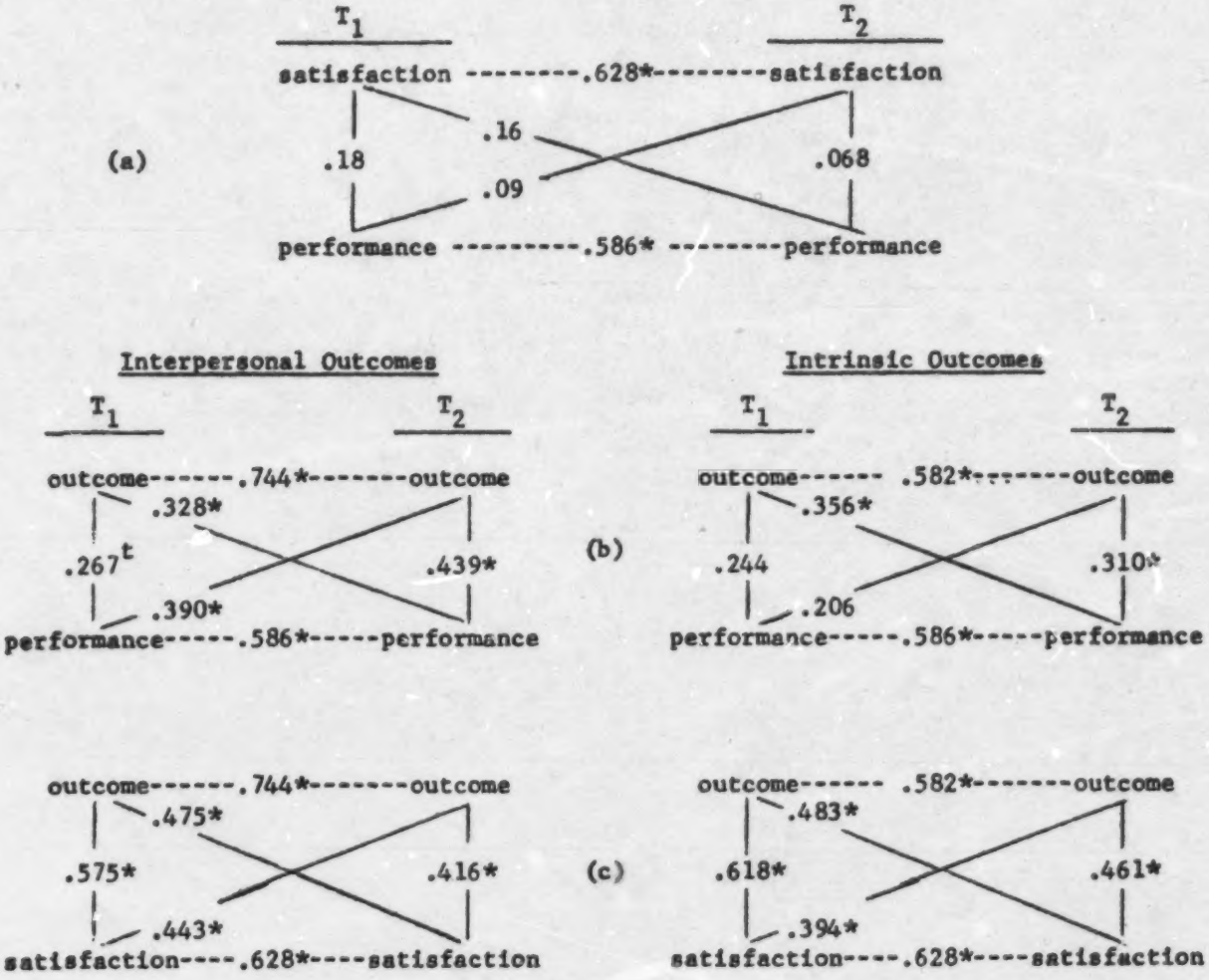

Figure 3. Self-rated panel data.

This figure displays cross-lagged panel correlations for satisfaction (self-rated), outcomes (self-rated) and performance (supervisor-rated). (* = p.<.01; t = p < .05).

performance evaluation of the supervisor. Figure 2 represents all variables supervisory rated.

First, I will discuss the results in Figure 2, relating supervisory ratings.

1) Figure 2 shows a significant relationship ($p < .05$) between satisfaction and performance for both cross-lags; however, the differences between the two cross-lags using a Fisher's Z-test is not significant.

2) Note the relationship between performance and outcomes (see Figure 2b). The lagged correlations between Factor I (interpersonal rewards) and performance are not significant; however, for Factor II (intrinsic rewards), there is a significant relationship between performance at time 'one' and outcomes at time 'two' (i.e., .257 is significant and .101 is not significant). This particular cross-lag would meet Lawler's (1968) criterion for causal inference. Use of Fisher's r-to-Z test suggests that the difference is not significant.

3) The relationships between rewards (either Factors I or II) and satisfaction exhibit no significant correlation at any cross (Figure 2c).

Second, in turning to the subordinates view (Figure 3), a different pattern of results may be noted.

1) Satisfaction and performance are not significantly related either concurrently or over time.

2) In looking at the relationship between outcomes and performance (Figure 3b), one finds a significant relation between 'intrinsic' rewards at time 'one' and performance at time 'two'; the reverse correlation (performance leading to intrinsic rewards) is not significant. The concurrent correlations and the test-retest reliabilities are stable. Again, this model would fit Lawler's criterion (1968), but does not reach significance on Fisher's test.

3) Relating interpersonal rewards and performance, both cross-lagged correlations are significant, but one is not significantly greater than the other.

4) In Figure 3c, one can see that satisfaction and both factors of the rewards are significantly correlated ($p < .01$) simultaneously and at lagged times. Thus, a definite relation exists between satisfaction and interpersonal and intrinsic rewards, although the direction of causality, if any, cannot be determined from this data.

One further point deserves mention as well; both rewards (interpersonal and intrinsic) have about the same correlation with satisfaction (.475 and .483). Thus, it appears that both factors relate about equally well to satisfaction.

Discussion

What perspective is the most accurate (supervisory or self-ratings) and what does this data lead us to believe? From a motivational point of view, it makes more sense to assume that person X's cognitions relate to his energy output and consequently his subsequent performance (Vroom, 1964; Porter and Lawler, 1968) and affective responses (Fishbein, 1967; Newman, 1974). That is, an individual can only be motivated (assuming a cognitive interpretation) by what he perceives, and not by what his supervisor or others perceive about the objective situation. He responds to the outcomes he believes he receives and not those perceived by the supervisor. Unless the focal has been highly vocal, the supervisor should have even less of an idea about that focal's satisfaction than he does about the focal's rewards, since one's affective responses are, by definition, internal states (private experiences). Rewards, on the other hand, are likely to be changed by perceptual processes only,

but do have their base in the environment. Thus, supervisor's rating of satisfaction may represent his own cognitive view of interrelationship between performance-rewards-satisfaction, and perhaps other relevant variables. Implications are obviously different depending on what theoretical model (expectancy theory; equity theory; social exchange theory) we adhere to in explaining motivation. Thus, what is being argued is that, to the extent that the supervisor cannot tap his subordinate's perceptions accurately, his report of the relationship between the three variables represents his cognitive representation of how the three variables should be related. The subordinate's view, on the other hand, represents a perceptual view which affects the behavioral and affective responses of the subordinate.

From the data reported here, it appears that the supervisor does not use his perceptions of subordinate outcomes in assessing satisfaction (there is no relation between the two when supervisory rated). The supervisors also do not report relationships between ratings of subordinate performance and interpersonal rewards. Here, he may be showing the lack of relationship he places between performance and interpersonal rewards, or of course, a response set representing his formal expected role as a supervisor: unbiased judge who administers equally to all. It is not organizationally sanctioned behavior to favor one subordinate over another. Dansereau, Graen, and Haga (1975) and Cashman, Dansereau, Graen, and Haga (1975), however, have found clear indications that superiors differentiate among their subordinates regarding interpersonal rewards and resource allocation.[3]

On the other hand, the superior does report that higher performers receive

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3. This author also found significant differences in interpersonal rewards received by subordinates.

more intrinsic rewards (many are job related or a part of the work). It is interesting to note that the supervisor reports performance tied to rewards which are self-administered rather than to rewards which he administers. The supervisor also reports a moderate relationship between worker performance and satisfaction.

The subordinate's view is distinctly different. There are two key differences. First, the subordinate relates satisfaction and outcomes. Intrinsic rewards are correlated higher with future performance than present performance is with future intrinsic rewards. Interpersonal rewards are also related significantly to performance. Second, satisfaction and performance are not directly related from the subordinate's perspective.

It is interesting to look at the relationships in total (see Fig. 4). The implications are that intrinsically rewarding jobs will lead to better performance. Interpersonal rewards may increase performance evaluation and they may be affected by performance evaluation. Both forms of rewards may lead to satisfaction, and satisfaction may lead to more rewards.

If these conclusions are appropriate, then management should be able to increase overall performance and morale (used here to mean collective satisfaction) by increasing the intrinsic rewards of the jobs.[4] One potential avenue for increased intrinsic rewards may be through job redesign (Ford, 1969;

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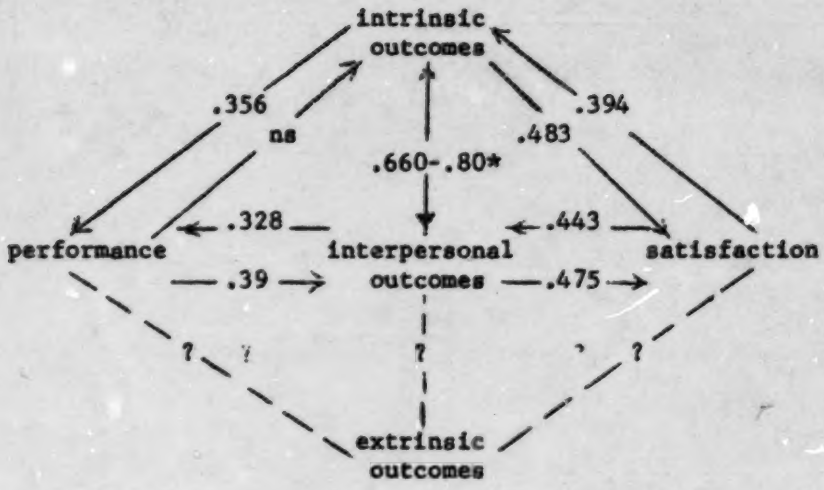
4. This does not necessarily imply that 'enriching' the jobs will have the same effect on each individual worker. Such variables as 'higher order need strength' (Hackman and Lawler, 1971), 'rural/urban' (Turner and Lawrence, 1965), 'alienation from middle class norms' (Hulin and Blood, 1969) and others have been shown to moderate certain job dimensions and relevant dependent variables (satisfaction and performance) for individual workers.

Focal's View



Supervisor's View

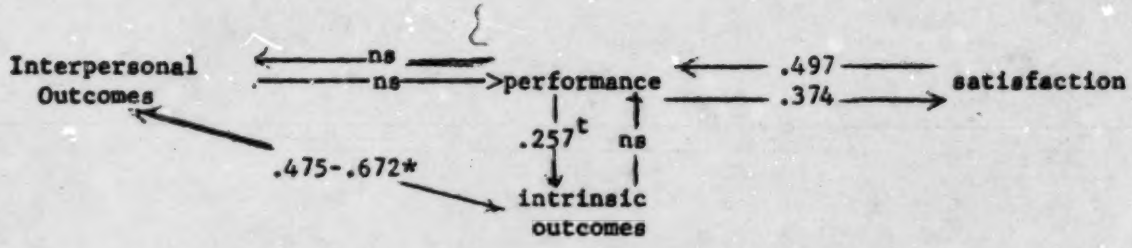


Figure 4. Summary Data.

This figure presents the various concurrent and cross-lag data in a summary format. All values are significant at the .01 level unless noted otherwise (t = $p < .05$; ns = not significant). Single arrows indicate cross-lagged ocrrelations; double arrows indicate concurrent correlations (first and second correlations refer respectively to t_1 and t_2).

Paul, Robertson, and Herzberg, 1969; Lawler, 1969; Hackman and Lawler, 1971; Hackman, Oldham, Janson, and Purdy 1974).

Of further interest is the fact that focals do not report a significant relationship between performance now and intrinsic rewards later; whereas, performance now is related to interpersonal rewards later. This differential relationship between the two rewards as resultants of performance might be explained by the fact that receiving interpersonal rewards is contingent upon the performance perceptions of the supervisor and not upon the actual performance. Receiving intrinsic rewards, however, may be more dependent on actual performance, and consequently, focals may perceive less of a relation between performance evaluation by their supervisor and the subsequent intrinsic rewards received.

The other possible approach to increasing performance and satisfaction would be through proper manipulation of interpersonal rewards (which are correlated with both satisfaction and performance). There are some indications that this second device for manipulating performance and satisfaction may be used quite frequently. Graen and Cashman (1975), for example, find that most leaders very quickly differentiate members of their unit into 'in' and 'out' group members (this is an index of the quality of leader-member exchange). The supervisor often does not have the ability to change intrinsic rewards within a short period of time; moreover, he may not have the control over extrinsic rewards for numerous reasons. Thus, interpersonal outcomes may become an attractive mechanism for differentially rewarding selected subgroups of subordinates.

Finally, I would like to address the issue of method variance. One might argue that the moderate correlations between outcomes and satisfaction (self-rated) could be a result of the measure (i.e., both rated by the same person)

instead of true variance. If this were the case, however, we would then expect similar correlations between outcomes and satisfaction when both are supervisor-rated. Instead, we find no relation between these two concepts. Thus, I would consider measure variance minimal in this rating situation.

Conclusions

Implications from this study are three-fold. First, this study shows merit for the initialization and development of controlled 'interpersonal rewards' as a means of linking satisfaction and performance. This outcome, although in need of further research, may be quite effective as a potential motivator of performance and source of satisfaction. Research relating to the use of this reward and its causal relations is strongly recommended.

Second, the study highlights the lack of awareness of the supervisor as to how the subordinates view the relation between performance, outcomes, and satisfaction. The subordinates report no direct relation between performance and satisfaction, but do relate both interpersonal and intrinsic outcomes to the two concepts. The supervisor does not relate either reward to satisfaction and only intrinsic rewards to performance. This naive view of the supervisor may be in need of change.

Third, the performance causing satisfaction model was not substantiated although moderate evidence is presented for a correlational relationship between the two concepts moderated by intrinsic and interpersonal rewards. Further, no causal relationship was discovered supporting the 'human relations' approach (i.e., satisfaction causing performance). It was apparent that other moderators would also be necessary to more fully explain the relationship between the two concepts.

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